

Urban Traffic Control Project in Beirut, Lebanon

Beirut, the capital of Lebanon, was facing massive traffic congestion, contributing to one of the city's most serious urban development problems. Due to reliable and affordable transport alternatives being absent, transportation accounted for a significant part of households' expenditures. As a result, effective policies were needed, based on weighing their overall economic cost and benefit to society.

Innovative solutions contribute to a healthy world without congestion.

In 2005, Kapsch signed a six-year contract with the Government of Lebanon for the design, deployment and maintenance of a state-of-the-art urban traffic management system. This project was followed by a series of projects to help the Lebanese capital address its transportation problems, improve traffic flow and manage parking. The city center is part of the Urban Transport Development Project (UTDP), which will specifically seek to improve traffic management in the future by establishing an autonomous metropolitan agency that will monitor and control traffic operations and install traffic signals at major intersections in the greater Beirut area. Another component of the project is aimed at improving safety by enforcing signals compliance using a RedLight Enforcement system.

Traffic congestion will also be alleviated by building new underpasses and bridges on busy intersections along seven main corridors entering Beirut. In addition, the UTDP will engage various stakeholders in the process of developing an urban transport development strategy aimed at an efficient and sustainable public transport system and improving air quality.



Project Scope:

The project scope included:

- the complete design and installation of signalized intersections, including controllers, poles and traffic lights, as well as civil works,
- the adjustment of time schedules by analyzing traffic patterns,
- the deployment of a complete fiber-optics network for communication,
- the installation of traffic sensors using video-based detection,
- the installation of cameras for remote video surveillance,
- the build-up of the new Traffic Management Center,
- the use of a traffic light enforcement system,
- the deployment and configuration of traffic management servers and applications for ten operators,
- the traffic engineering for a real-time adaptive regulation (ITACA module), and
- the maintenance and assisted operation for the post-delivery period.

The Challenges:

The installation of the devices in the city presented major challenges, as the area had suffered from a war-like situation for decades due to its proximity to the conflicts in the Middle East. Even during the implementation of the project, there were some critical phases in the pre-war situation, resulting in a slower than expected deployment.

In addition, the general behavior of drivers was very unpredictable due to the lack of effective traffic management for years, which required not only support in the first months after project implementation, but also the progressive introduction of traffic lights enforcement.

The Solution:

The traffic management component is composed of three interrelated elements:

- Installation of traffic signals covering 231 intersections in the greater Beirut area
- Installation of a pilot video surveillance system along four corridors, as part of a plan for other corridors in the future
- Setting up a traffic control center that acts as a communication hub linking all traffic control sub-systems and from which monitoring, control and intervention can be managed

Equipment:

- Control Center
 - Intelligent transportation system software
 - Adaptive traffic control ITACA-based
 - 1 server computer
 - 12 traffic control terminals
- Field Equipment:
 - 247 RMY controllers
 - 1967 traffic signal heads (plus
 - 1643 pedestrian signals)
 - 179 cantilever mast arms
 - 998 traffic signal poles
 - 10 Red Light Enforcement systems
 - 40 CCTV cameras for video surveillance
 - 400 DAI cameras with
 - Traficam system



The Added Value

- Reduced travel times and traffic congestion as a general result.
- Increased effectiveness on city corridors during peak hours.
- Improved road safety through enforcement of first and optimized traffic timing plans, including real-time adaptive.
- Pollution, even though not relevant as project result, was slightly reduced.